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COTTON IN ARGENTINA

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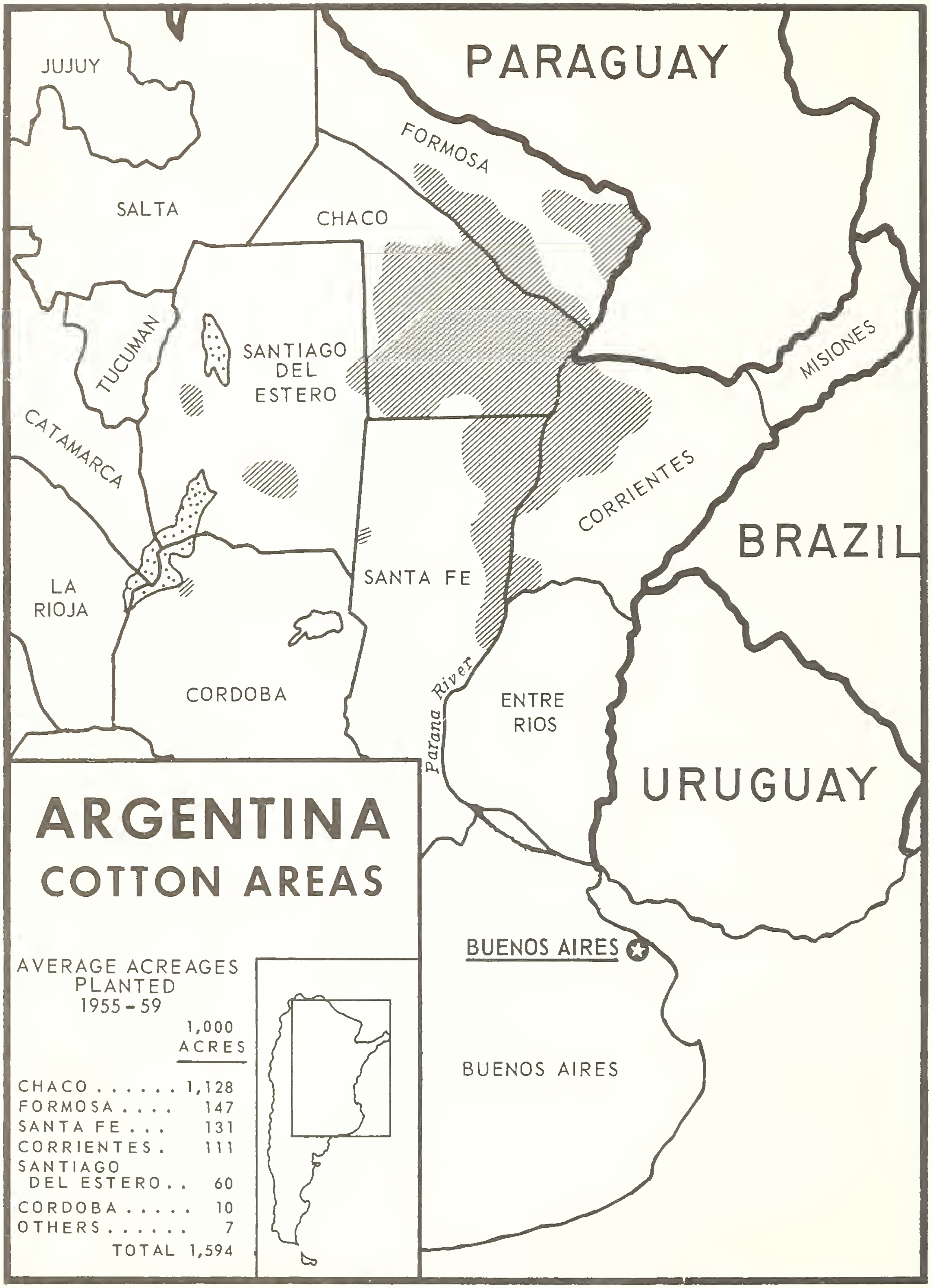

ARGENTINA COTTON AREAS

AVERAGE ACREAGES PLANTED 1955 - 59

	1,000 ACRES
CHACO	1,128
FORMOSA	147
SANTA FE	131
CORRIENTES	111
SANTIAGO DEL ESTERO	60
CORDOBA	10
OTHERS	7
TOTAL	1,594

Preface

Argentina is the fourth largest country in the Western Hemisphere, and has extensive areas of tillable land. Although much of the land is cultivated, yields for most crops are generally low. Current plans for economic development apparently recognize the potential of expanding agricultural production as part of a solid base for the future of the country.

As it develops its agriculture and industry, Argentina has a good chance of becoming one of the more prosperous countries of the Western Hemisphere. Per capita incomes already are second highest in South America. They are exceeded only by incomes in oil-rich Venezuela.

The potential exists for cotton to have an important place in the country's economic development plans. Per capita consumption is high; the 21 million Argentinians consume an annual average of 13 pounds each. The country is normally a net export of raw cotton. However, no spectacular expansion is envisioned for any phase of Argentina's cotton industry because of many obstacles.

In this report, these obstacles are assessed, along with various other factors affecting production and trade of raw cotton, production and domestic use of cotton textiles, and the probable direction of the industry during the next few years.

Commercial cotton production began in Argentina more than 400 years ago, and, during the intervening years, the industry had a long period of growth, and a period of gradual decline. It disappeared almost completely around 1860 and, despite vigorous efforts by the British to encourage production when the Civil War in the United States reduced world supplies, did not appear again as a commercial crop until after 1890. Then it expanded rapidly, and, currently, appears to be in a period of continued gradual expansion.

There are no estimates of acreage or production for early years, but after Spanish missionaries introduced cotton in the Province of Santiago del Estero in 1556, it quickly spread to the neighboring Provinces of Tucuman and Catamarca, and for 200 years was reportedly the major farm crop in these areas. Beginning around 1750, cotton production gradually declined as other crops were introduced and as local demand for cotton fiber was reduced by a rising output of wool.

East of the early commercial cotton producing region in the Province of Corrientes, Indians were raising cotton for home use prior to the introduction of the crop in Santiago del Estero. Production in Corrientes closely followed the pattern of decline, but not the complete disappearance, experienced in the early commercial area. All of the cotton produced prior to 1890 is believed to have been varieties indigenous to South America, whereas later production has been mainly upland varieties derived from U. S. cottons.

When production was resumed, the area of production had shifted toward the northeast to the Provinces of Chaco and Formosa, the center of the present cotton belt.

The Chaco was settled mainly by northern and eastern Europeans, people with no previous experience in producing cotton. However, the government encouraged the settlers to produce cotton, and it developed as the only important commercial crop in the area. Today, this system of a monocultural agriculture, based on cotton, still exists.

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The debt of the author extends to these same individuals and groups for the information they so generously supplied. Also invaluable was the assistance of the U.S. agricultural attaché's staff and those people in Washington and Argentina who reviewed the manuscript and made helpful suggestions concerning it.

COTTON IN ARGENTINA

By Jimmy D. Minyard
Cotton Division

Summary and Conclusions

Commercial cotton production began in Argentina more than 400 years ago. After a long period of growth in the northwest, it gradually declined until it died out in the mid-1800's. Seventy years ago the crop was reintroduced--this time in a new producing region known as the Chaco, in north-central Argentina. Since then, cotton acreage and production have trended steadily upward. The trend in yields, however, has remained fairly constant, and, currently, Argentine yields are among the lowest in the Western Hemisphere. Apparently, even the maintenance of yields has been difficult, as invading insects and diseases, particularily the pink bollworm and fusarium wilt, have added their ravages to the always-severe problem of poorly distributed rainfall.

Excess moisture during harvest is one of the major problems of the Argentine cotton farmer. Around 40 percent of the annual precipitation normally falls during the months of harvest. This rainfall prolongs the picking season and results in low yields and low quality. A chronic labor shortage adds further to the problems of harvest and, thus far, little has been achieved in developing mechanized harvesting.

Government policy toward cotton generally has been directed to achieving self-sufficiency in raw cotton and cotton textiles, and little effort has been directed to developing export markets for either raw cotton or cotton textiles. Official policy appears to have been generally successful from the standpoint of cotton textiles and from the standpoint of quantity of raw cotton. However, because of the preponderance of low-quality cotton produced, there is an almost constant need to export extremely low qualities and import high-quality cotton. Research and extension workers, directed by the Instituto Nacional de Tecnologia Agropecuaria (INTA), are working diligently to overcome the problems of cotton farming in Chaco.

Progress in expanding cotton production undoubtedly will be made, but the increase may not outstrip by any wide margin the growing domestic need. Consequently, Argentine cotton is not expected to offer much competition to U. S. cotton in world markets, at least not for several years. In fact, because of the natural conditions under which most Argentine cotton is produced, there is a good possibility that the need to import high-quality cotton will be at a relatively high level for the next several years. Some long-staple U. S. upland cotton could be used to advantage in Argentina, but present trading arrangements with Peru generally preclude all but Peruvian growths from entering the country. Until such time as Argentina liberalizes imports of cotton, it is not likely that U. S. cotton will be used there.

Area of Production

Argentine cotton production is centered in two northern Provinces, in Chaco and Formosa. These two Provinces, known as the Chaco or the Chaco Region, produce about 80 percent of each year's crop. Most of the remaining cotton is grown in neighboring Corrientes, Santiago del Estero, and Santa Fe, but relatively small acreages are planted in several other northern Provinces including Cordoba, Missiones, Salta, Jujuy, Catamarca, and La Rioja. Practically all of the cotton grown in three of these Provinces--Cordoba, Catamarca, and Salta, all located at the base of the Andes in the north and west--is grown under irrigation, and these Provinces account for all of the longer staple and a sizable share of the higher grades of cotton produced in the country.

These irrigated areas and the acreage in other western Provinces represent practically the only irrigated cotton acreage in Argentina.

The Chaco is a subtropical plain, with heavy alluvial soils that are generally suitable for cotton production where they are well drained. The major area of production is in a latitude similar to that of northern Mexico and southern Texas and has a growing season of around 300 days. Vegetation native to the Chaco includes heavy growths of scrubby brush over large areas, tall savanna grasses, palm forests, and quebracho forests.

Three fairly distinct climatic areas are discernible in the Chaco. Along the Parana and Paraguay Rivers and extending westward for about 100 miles, the climate is humid; rainfall exceeds 50 inches annually along the rivers, dropping off to about 40 inches in the west. The semiarid or semihumid region, where rainfall ranges from 40 inches down to 25 inches, extends roughly 100 miles farther west. The arid region, where rainfall is less than 25 inches and in some areas less than 5 inches, includes the western reaches of both Chaco and Formosa. In the arid region, most crops cannot be grown without irrigation because rainfall received usually is heavy for short periods and runoff is rapid. Also, evaporation is rapid because of low humidity.

Usually, around 80 percent of the rain in the Chaco falls from September through May, but 40 percent of each year's rainfall comes in the months of harvest--February through May--and can delay harvest for long periods. Thus, rainfall each year is by far the major factor determining yields as well as the grades of the crop.

Land Tenure

Land tenure in the Chaco is unlike that of most of the remainder of Argentina, in that there are few tenant farmers; most of the farmers are either owners or squatters. The Chaco was one of the last sections of Argentina to be settled. Private companies, interested primarily in harvesting the quebracho trees, attempted to sell cutover land to settlers as early as 1880, but the most rapid rate of settlement was in the 1920's, largely on public lands. Farms in the Chaco tend to be small when compared with other areas of Argentina. The government, when it began to encourage settlement of the area in 1923, limited the size of farms in Chaco and Formosa to 100 hectares (247 acres) of cropland and 625 hectares (1,544 acres) of grassland, whereas earlier settled regions in much of the rest of Argentina usually were on large grants of land. These large grants were then broken into small plots by the owners and rented to tenants, resulting in a high percentage of tenant farmers--up to around 50 percent in some areas. The small original grants in the Chaco prevented tenancy from becoming a common practice.

Although many of the farmers in the Chaco have farmed the same land for many years, they have not been granted a title. Technically, they are squatters, but the government is slowly granting titles to these farmers. Thus, they are, in effect, landowners even though they have no title to their farms.

Crop production in this area is possible only on the better drained higher plots and these are generally small areas surrounded by forests and swamps. Farther west, in the semiarid region, these natural limitations to farm size, although still present, are less pronounced. Farmers in the east plant an average of 30 to 40 acres of cotton, while some farmers in the west plant from 100 to 250 acres. There are, of course, many larger farms in both the east and west but, numerically, small and medium-sized farms predominate in both areas.

Trends

Cotton acreage and production in Argentina have, with a few minor setbacks, trended steadily upward since cotton culture was reintroduced around 1890. Average yields of lint, however, have not changed significantly during the 70-year period, (See Appendix, tables 1 and 2).

Acreage and Production

Annual data for planted acreage back to 1909 show a rather sharp uptrend that has generally been maintained. The first spurt in cotton acreage took place in the mid-1920's. Planted acreage in 1922 totaled 56,600 acres; in 1923, it jumped to 154,825 acres; and in 1924, it reached 258,250 acres. However, the most spectacular continuous acreage increase in Argentine cotton history occurred from 1933 through 1937, years which coincide with a period when production in the United States was first controlled. Argentine cotton acreage began a 4-year decline in 1938, following the record crop harvested in the United States and several other countries in 1937, which in turn caused world prices to tumble.

The trend in acreage after 1941 was sharply upward until a record 1.8 million acres was reached in 1957. Since then, acreage has ranged between 1.5 million and 1.7 million acres. The rapidly developing textile industry in Argentina created an assured demand for cotton, and this undoubtedly was a factor in encouraging farmers to increase cotton acreage after 1941. Before the textile industry increased its capacity, much of the cotton was exported, the acreage fluctuations reflected changes in world cotton prices. Throughout the period between 1909 and 1960, there has been a notable tendency for exceptionally large acreage increases, ranging from 1 to 5 years, to be partially offset by similar periods of acreage decline.

Through the years, the only factor which shows a significant relationship to planted acreage has been the price of cotton. Practically all sizable acreage changes coincide with sharp price fluctuations, although, for many years, prices have been controlled, both directly and indirectly, by the government. For a number of years, the Argentine Government guaranteed minimum prices to producers as a direct means of maintaining a desired price level. This policy was discontinued after the 1958-59 season, but the indirect policy of restricting imports to a small quantity of nondomestically produced long-staple cotton continues in effect. Thus, by controlling the supply of cotton available to Argentine textile mills, the price of cotton is maintained at relatively stable levels during periods of fluctuating world prices.

There is little reason to expect a radical change in the present trends in acreage over the next few years. That the land supply is adequate for a much larger cotton acreage is evidenced by the 250,000-acre increase in 1957. In fact, it has been estimated that, in the Chaco, there are around 10 million acres of potential cotton land if transportation, clearing, drainage, and other problems are overcome. As yet, no alternative crop has been found that is competitive with cotton in the cotton belt. Research is being conducted to overcome some of the problems that tend to discourage a continued rapid acreage expansion, but research takes time, and adoption of improved practices discovered through research is even slower. However, the expanding domestic demand for cotton should keep prices at a relatively favorable level, thus attracting new producers and encouraging farmers now growing cotton to plant additional acreage.

Trends in harvested acreage follow generally the trends in planted acreage. Abandoned acreage during the last 20 years has ranged from a low of 5 percent to a high of almost 30 percent and averaged slightly over 10 percent annually. These sharp variations result mainly from weather, but damage from insects and diseases, which varies widely each year, also results in substantial acreage abandonment in some years. Eventually, the insect and disease problem may be curtailed significantly with improved cultural practices, but since excessive rainfall during harvest is the major factor in abandonment, there is little likelihood of much change in the relationship between planted and harvested acreage from that which has existed for the last 20 years.

The trend in cotton production generally has followed that of acreage, but, because annual yields vary widely, fluctuations in production have been much more pronounced. All of the upward trend in output is attributed to a larger acreage, since the trend in yields has not changed significantly over the years.

A 5-year moving average (used to minimize the influence some of the exceptionally wide annual fluctuations) indicates that production has trended upward at a rate of about 18,300 bales per year for the last 30 years. In 9 of the years, the average moved downward, but, following each decline or series of declines, exceptionally sharp increases occurred that caused the trend to remain upward.

Some of the factors causing the wide variations in production from year to year should be overcome in time, but the major factor in determining annual yields, and, consequently, production, still is weather. Although this can be overcome partially by improved technology, rainfall during harvest will continue to be the main determining factor in production each year, as it is with harvested acreage and yields.

Yields

The trend in yields has not moved significantly up or down since 1935. In fact, yields apparently have not changed significantly since cotton was reintroduced as a commercial crop around 1890, but acreage data prior to 1935 are not comparable with later data and this makes absolute comparison impossible. Acreage estimates before 1935 were made by a variety of methods and were only for planted areas. Since 1935, estimates have been on a comparable basis each year and include data for both planted and harvested acreages.

Argentine yields of lint per acre between 1935-36 and 1959-60 ranged from a low of 97 pounds per harvested acre in 1937 to a high of 290 pounds in 1943-44. Although the trend in yields has been fairly steady, a wide range in yields is not rare; in many years, there is a sizable change from the preceding years. Increases or decreases in recent years have not been as pronounced as earlier, possibly reflecting some use of improved cultural practices by farmers.

The principal determinant of each year's yield is weather during the season. In some years, heavy rainfall prevents harvesting for long periods, resulting in greatly reduced yields. Indirectly, weather influences the amount of damage done each year by insects and disease, which are the other important factors affecting yields.

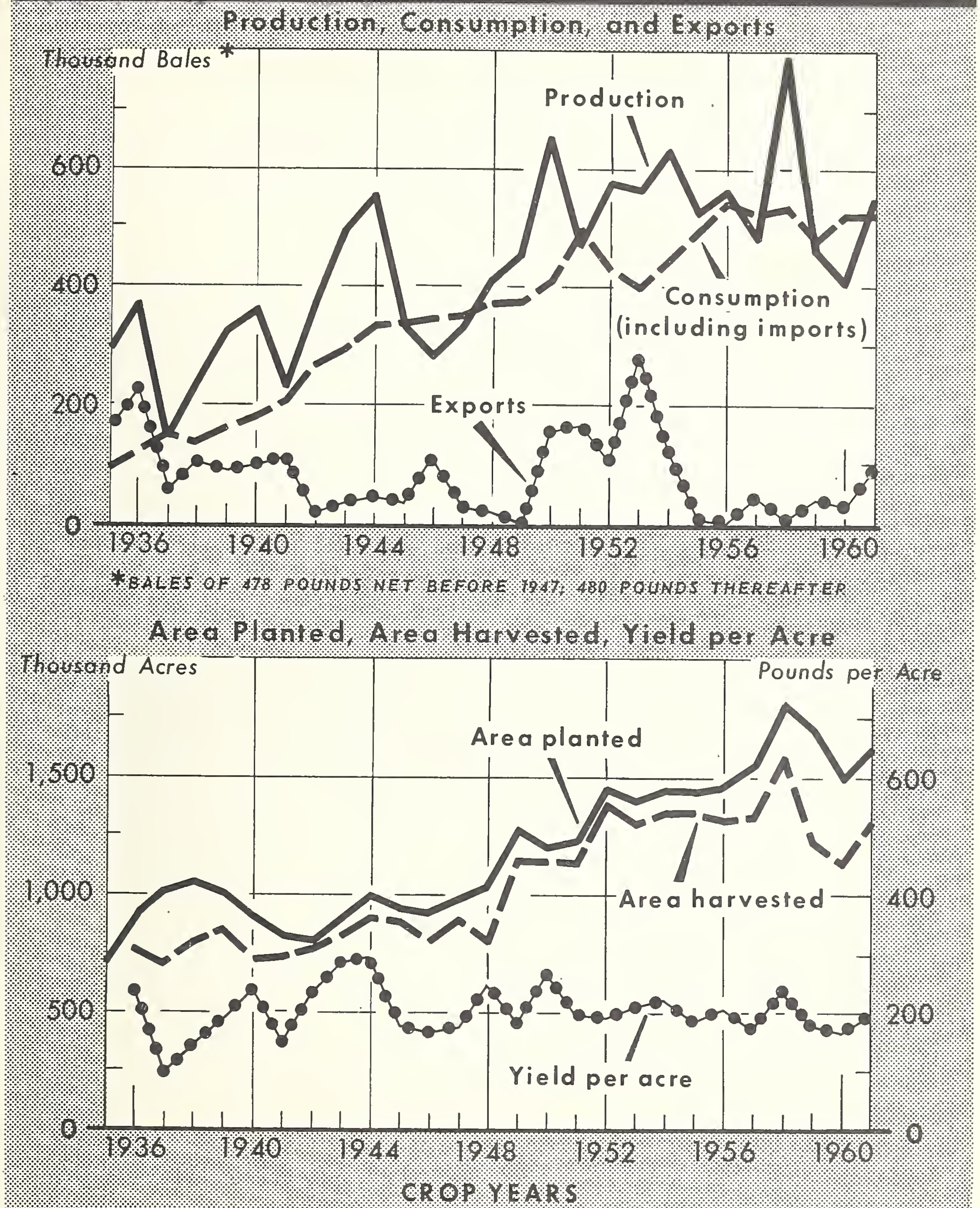
Argentina has a fairly extensive research system for cotton and much work, especially in recent years, has been done on varieties, cultural methods, and insect and disease controls. Research findings, however, have not been widely adopted by the cotton producers. Much of the research has been directed toward improving highly mechanized operations, and these operations would require further capital investment in equipment, an exceptionally high cost item in Argentina. Farmers, thus far, apparently have preferred to invest as little as possible in each year's crop, since unfavorable weather during harvest could wipe out all gains made by the additional capital outlay.

Much of the improved technology undoubtedly will be applied in the future, and this could be fairly rapid if costs can be reduced. Consequently, some increase in yields can be expected, but there is little evidence that any startling advances will occur in the near future. In fact, the short-term outlook is that yields will continue to average around the level of the last 25 years.

Labor Supply

Labor in the Argentine cotton belt is constantly in short supply, and the shortage becomes acute at harvesttime. Traditionally, labor for harvesting cotton has migrated from neighboring Provinces and Paraguay, but each year their numbers dwindle because of better job opportunities at home and because, since January 1957, Paraguay has restricted the exit of its citizens to Argentina for cotton picking, evidently as a means of maintaining an adequate labor supply for domestic cotton producers. The ban on labor movement, however, may not have been too effective in view of Paraguay's long common border with the Argentine cotton belt, which makes enforcement difficult. Another factor

Cotton in Argentina, 1935-61



Production, Consumption, and Exports

*BALES OF 478 POUNDS NET BEFORE 1947; 480 POUNDS THEREAFTER

Area Planted, Area Harvested, Yield per Acre tending to reduce migration is the exceptionally low daily earnings of a cotton picker.

Labor needed during harvest cannot remain in the area after harvest is completed since cotton is practically the only crop produced. Further, much of what little industry there is in the cotton belt is closely allied with cotton, such as cotton ginning or cottonseed processing. This lack of employment opportunity discourages labor from permanently migrating to the Chaco.

Work at the various experiment stations in the Chaco has demonstrated that hand labor needed for growing cotton can be reduced sharply with rotary hoes and herbicides, but these practices have not been widely accepted by the farmers, probably because the experiment stations also found that costs of production with hand labor for weeding were about equal to costs with rotary hoes and herbicides. This reflects the relatively low wage rates and high costs of machinery and herbicides.

Argentina's rapidly expanding chemical industry is likely to encourage more widespread use of herbicides. The use of machinery for harvesting, however, probably will be adopted much more slowly for numerous reasons, the most important being: (1) excessive rainfall during harvesttime, making defoliation difficult (new defoliants that are quick acting may overcome this problem) and keeping machinery out of the field for long periods; (2) the lack of well-adapted varieties with characteristics for mechanical harvesting; (3) the large initial investment required because of high prices for machinery; (4) the relatively small acreage on a large number of farms, making impractical the investment required (this would be overcome by expanding custom harvest work); and (5) the lack of suitable equipment in gins for handling machine-harvested cotton.

The critical shortage of labor for harvest is expected to be a continuing obstacle in expanded cotton acreage. This could encourage farmers to diversify their farming operations if competitive crops or livestock enterprises are found.

Machinery Situation

The soils in the Chaco are sufficiently heavy that medium to large wheel-type tractors are needed for plowing. Also, some recently introduced operations, such as the control of weeds with rotary hoes, require power and speeds attainable only with tractors. Most of the larger farmers in the cotton belt own tractors, but the small acreage in cultivation on many farms practically prohibits the necessary investment required for a tractor. Estimates of cultivated acreage in the cotton belt large enough to warrant investment in a tractor range from 70 to 125 acres.

Separate data are not available for the cotton growing region on the use of tractors, and data for all of Argentina may not apply too closely to the cotton belt. However, tractors in Argentina normally are used around 1,000 hours each year, compared with less than 600 hours in the United States. It has been estimated that tractors in the Chaco also are used around 600 hours as a maximum.

There are relatively few tractors in Argentina, an estimated 93,000 in 1959, and the area under cultivation at that time was around 53.4 million acres, or an average of 575 acres per tractor. In contrast, there are less than 100 acres of cultivated cropland per tractor in the United States.

The exceptionally high cost of farm machinery in Argentina is due to governmental regulations designed to conserve foreign exchange and foster domestic industry. Import duties and surcharges range up to 300 percent of the value of machinery imported. Domestically produced machinery is also expensive.

Prior to 1954, all tractors in Argentina were imported, but in 1954, the first domestic plant began operation. Other firms began more recently to make tractors, and present industrial plans envision domestic manufacture of at least 80 percent of the new tractors purchased by 1964. (This is not to indicate that purchases would not be much larger if a more realistic import policy were followed.) These plans also call for a reduction in the present ratio of one tractor per 575 acres of cultivated land to one tractor per 375 acres.

Expansion of domestic tractor production could be associated with materially reduced prices. With lower investment required for tractors and equipment and lower operating costs--a result of the rapidly developing petroleum industry in Argentina--small-scale farmers probably would be willing to invest in mechanization if credit on reasonable terms were available. In the cotton belt, however, farmers probably will be less willing to invest in machinery and to plan large-scale acreage expansion until the problems of mechanical harvesting are at least partially solved.

Insects and Diseases

Argentine cotton farmers are plagued with most of the same insects and diseases that are found in the U. S. cotton belt, the most notable exception being the absence of the cotton boll weevil. The most serious insect and disease losses usually are from cotton wilt and pink bollworm damage.

Cotton wilt (fusarium wilt) has caused severe losses in recent years, and has been noted over an ever-growing area, spreading principally in an area in Eastern Chaco, but also over much of the rest of the cotton belt. The rapid spread of the disease is attributed mainly to the planting of susceptible varieties of cotton. Research is being conducted at the experiment stations with wilt-resistant varieties, both U. S. and native, and several strains already have proved either resistant or tolerant to the fungus causing wilt. Some work has been done with fungicides, but their use is not widespread. Planting of resistant varieties promises good results at relatively low cost to the farmers, and this practice probably will be widely adopted in the next few years. Bacterial blight (angular leaf spot) also causes serious losses in many years.

Other diseases found in Argentina, but which thus far have not normally caused extensive damage are seedling blight (anthracnose) and verticillium wilt.

The insect causing the greatest losses to the farmer in most recent years has been the pink bollworm. For a number of years, the pink bollworm was contained in Formosa Province, but by 1958-59, large areas over the entire cotton belt were invested. Most of the controls used in the United States are effective in Argentina, but, until the spread was complete throughout the cotton belt, there was little effort by the farmers to apply these measures. For years, gins have been required to burn gintrash, and since 1957, a decree has been in effect calling for cutting and burial of stubble by May 15 through June 15 each year depending on the area, but the decree is largely advisory, since it has no provisions for enforcement. In most cases where farmers have plowed up or burned stubble, they have waited until after the first frost, which, because of the cycle of the pink bollworm, curtails considerably the value of the practice as a means of controlling pink bollworm. Farmers apparently are unwilling to plow up the cotton and burn the stubble as early as May 15 because harvest normally is not complete by this date. In time, the pink bollworm problem may be reduced, but a stricter and more enforceable control law is needed, and, in addition, several of the other problems that prolong harvest need to be overcome so that farmers will have less economic justification for not plowing up and burying stalks early. Recently a decree was issued providing for compulsory fumigation of all cottonseed at the gins, but, since infestation is just about complete throughout the cotton belt and other control measures are not generally followed, this decree is expected to have a minimum control effect.

Other insects that cause extensive losses to Argentine cotton farmers in some years are the cotton leafworm, cotton bollworm, aphids, thrips, and red spiders. Recommended control measures for these insects in Argentina are the same as those in the United States, but few farmers use the controls as yet. Perhaps the rapidly developing chemical industry will provide insecticides to farmers at lower costs, and thereby encourage a sharp expansion in their use. But the prospects are that insects and diseases will continue to plague Argentine cotton farmers for some time, mainly because of related technical problems that must be overcome before farmers will be willing to follow all the recommended control procedures.

Varieties, Grades, and Staples

Practically all the cotton grown in Argentina today is derived primarily from four U. S. cottons--Acala, Coker, Deltapine, and Stoneville. Some crossbreeding of U. S. varieties with native cottons has occurred, but most of the varieties, including those with Argentine names, are selected strains of the four U. S. cottons.

Experiment stations are responsible for seed multiplication as well as variety selection in Argentina. In 1958-59, the stations planted 2,100 acres of cotton with the equivalent of certified seed and supervised planting of 18,235 acres with first-year seed. The general practice has been for the government to import small lots of certified seed from the United States, for planting at the experiment stations. The experiment stations make selections from the U. S. varieties and multiply the selections. However, in 1959, because of the exceptionally poor quality of the 1958-59 seed crop, 600 tons of U. S. seed was imported, much of which was distributed directly to farmers.

Variety studies and selections have played an important part in the work of INTA technicians at the cotton experiment stations. Through selection of new and improved varieties, yields have been maintained in the face of the many problems confronting cotton. Improved varieties probably have accounted for some of the recent leveling of the extreme fluctuations in annual yields, and continuing variety work can be expected to result in selections which will increase yields.

Argentine lint cotton is graded by an alphabetic series from Grade A through Grade F. Grade A, which is comparable to the U. S. grade of Strict Middling or better, is the highest quality and normally accounts for only 1 percent of the total crop. Grade F and inferior to F, the lowest qualities, together average around 7 percent of the total crop. Grade F is comparable to U. S. Good Ordinary, and Inferior to F is the same as Below Grade U. S. cotton. Almost two-thirds of the crop normally falls into the two grades of C and D which are about the same as Strict Low Middling and Low Middling, respectively. The relatively high percentage of lower grade cotton is the result of excessive rainfall received during harvest and heavy disease and insect damage in some years. In 1957-58, only 42 percent of the crop was grade C or D and more than one-half of the crop was grade E, F, and Inferior. The following table gives a brief summary of the quality of the Argentine crop in recent years:

Argentine grade	Approximate equivalent U. S. grade	Average share of 1956-60 production
		Percent
A	Strict Middling or better	1
B	Middling	11
C	Strict Low Middling	31
D	Low Middling	29
E	Strict Good Ordinary	18
F	Good Ordinary	8
Inferior to F	Below Grade	2

These relatively low grades are one of the major concerns of experiment station officials. They hope to overcome many of the problems through improved varieties, better cultural practices by farmers, and increased mechanization to speed up harvesting (Appendix, table 9).

Argentine cotton is relatively short-stapled, although much of the crop is derived from U. S. varieties with staples of 1 inch or more. During the 5 years, 1956-60, the proportion of the crop measuring 25 millimeters or less (25.40 m.m. equals 1 inch) ranged from 92.1 percent to 98.6 percent and averaged 95.2 percent. Cotton measuring 22 m.m. or less (22.22 m.m. equals 7/8 inch) ranged from 6.1 to 11.7 percent of the total and averaged 7.9 percent. Although short-stapled, 80 to 90 percent of the crop normally falls into lengths measuring 23, 24, or 25 millimeters (Appendix, table 8).

Length		Average share of 1956-60 production
Millimeters	Inches	Percent
22 or less	---	8
23	7/8 or less	22
24	29/32	41
25	15/16	24
26 and over	31/32 and over	5

All of the relatively small volume of cotton produced in Catamarca, Cordoba, and Salta normally exceeds 1 inch and all of the cotton 1-1/8 inches and longer usually is produced in these Provinces. In 1959-60, these three Provinces produced less than 1 percent of the crop in Argentina but accounted for almost 25 percent of the total output with a staple length exceeding 1 inch. Santiago del Estero also produces cotton with a staple generally exceeding 1 inch. Since the small volume of domestically produced long staple cotton is not sufficient to meet domestic needs, there is an almost constant need to import varying quantities of long staple cotton.

Competitive Enterprises

In these Provinces of Chaco and Formosa, between 300,000 and 400,000 acres of crops other than cotton are grown each year, or less than 20 percent of the estimated 1.7 million acres under cultivation and less than 3 percent of the estimated 15 million acres of potentially tillable land (based on 1947 data). In areas outside the Chaco, however, especially in the irrigated sections of northwestern Argentina, competitive crops prevent wide-scale planting of cotton. In these irrigated areas, costs of production are high as are initial costs of preparing land for cultivation. This encourages production of crops that fit into a more intensive-type farming operation, such as fruits and vegetables. This tends to keep cotton acreage from expanding. Also, over the years, the government has done little to encourage cotton production in western Argentina, with the exception of building official gins in marginal regions, but instead has concentrated efforts to expand cotton in the Chaco.

Farmers in the Chaco obtain relatively favorable yields from many crops, but returns per acre from cotton apparently are more favorable since less than one-fifth of the cultivated cropland is in competitive crops. Roughly, two-thirds of the land not in cotton is planted in either corn or grain sorghums, most of which is used locally for feeding livestock.

Corn acreage in the Chaco is not expected to expand significantly until prices in relation to cotton, local demand, and yields improve. Low corn yields are a result of periods of drought during the early stages of growth and of extensive worm damage to young plants and to ears. Grain sorghum yields would probably be high enough to encourage some expansion, but losses in many years because of excessive rainfall after maturity are heavy and almost every year losses to migratory birds are exceptionally heavy. These losses discourage larger plantings.

Some castorbeans are produced in the semiarid region of the Chaco, with output ranging from 750 tons to 2,500 tons annually. The experiment station at Las Brẽnas is conducting research with castorbean production and has offered some encouragement to farmers to expand acreage. However, additional production would have to be sold on the world market in competition with castorbeans from India and Brazil. Since much of the crop in these two countries either grows wild or in otherwise nonproductive land, it is questionable whether Argentina, with high production costs, could compete effectively in this commodity.

Sugarcane yields well in the humid region of eastern Chaco and Formosa, but acreage remains fairly small. Monthly rainfall and temperatures are practically the same in eastern Chaco as those in Tucuman, where around three-fourths of the Argentine cane crop is grown. However, there is little chance to expand sugar production, since, during recent years, problems of overproduction led to depressed prices and, in 1960, to governmental control over the industry.

Vegetables and fruits, mostly citrus fruits, are produced in Chaco and Formosa, but on a relatively small scale. Both of these crops require a large labor force, especially at harvesttime, and since labor is in short supply in the area, farmers are not expected to expand acreage greatly. Furthermore, the perishible nature of many of these commodities limits production to local demand since the transportation system is such that perishible commodities cannot be quickly marketed in urban centers.

Both Chaco and Formosa have large numbers of beef cattle--more than a million head each. However, most of these cattle are native and, although they are acclimated to many of the insects and diseases of the area, they have a low level of productivity. In 1957, less than 30 percent of the 1.2 million beef cattle in the Province of Chaco were of an improved breed.

Other livestock in Chaco and Formosa include 500,000 horses, 325,000 sheep, 100,000 hogs, a small dairy industry, and near the larger cities, a small poultry industry. An adverse climate for livestock, prevalence of insects and diseases, lack of improved pastures, small supplies of domestically produced feedstuffs, and a lack of application of improved managerial techniques are but some of the factors that combine to keep the livestock industry of the Chaco at a low level of productivity. This low outturn per unit discourages expansion of the livestock industry to complement cotton production or to replace cotton as the only enterprise worthy of resource investment.

Government Policy

Government policy has played an extremely important role in the development of the cotton industry in Argentina. Official pricing policy, more than all other factors combined, apparently has been responsible for the continued growth of the industry since 1923. The role of the government has been to stimulate production sufficient to meet domestic needs, but little effort has been expended in recent years to develop cotton as an export crop. Government policy has been successful from the standpoint of quantity, but, because of low quality, there is an almost constant need to import varying volumes of higher quality cotton (long or extra-long-staple cotton).

The only major deviation from the policy to achieve self-sufficiency in cotton occurred during the early years of World War II. Argentine officials and industry leaders, encouraged by the rapid expansion of cotton acreage during the mid-1930's, began to envision the country as a leading exporter of cotton. Predictions were made that Argentina, then producing less than 1 percent of the world cotton crop, would be able to produce as much as 10 percent. This enthusiastic vision was based on estimates that the area suitable for cotton production was at least 10 times larger than the million acres planted at that time. Evidently a second look at the cost involved in the proposed expansion dampened the ardor for the project, since little was done at the time and little mention has been made of Argentine prospect for such large-scale production in recent years.

The first government action to expand cotton production was the official efforts to colonize the Chaco beginning in 1923. Since that time, numerous official programs have been enacted to encourage a larger cotton acreage. Probably the most effective direct program was the guaranteed minimum price system maintained for a number of years. Another important program directly affecting production was the establishment of experiment stations for technical research and as seed multiplication centers.

Less direct programs influencing cotton production have been the various official measures that controlled the supply of cotton available to domestic textile mills by effectively preventing imports of cotton of a quality similar to that produced domestically, controlling exports through a system of export licenses, and at times, heavy export taxes, and limiting textile imports. The government actively encouraged formation of cooperatives for ginning and marketing cotton. In areas where ginning facilities were not adequate, mostly in outlying frontier areas, the government established a few official gins. All of these various programs have been controlled by some type of Cotton Board established by the government and charged with the responsibility of ensuring that the aims of official policy were safeguarded.

The present Cotton Board was authorized by the Congress in 1958, promulgated by Law No. 14,770 in March 1959, and established in July 1959. The Board, which is comprised of members of all segments of the cotton industry and Federal and interested State Governments, has the responsibility of "promoting production, marketing, and industrialization of cotton".

Various official programs now in effect include most of the previously discussed methods of encouraging cotton production. The notable exception is that, since 1958-59, there has been no guaranteed minimum price. Instead, farmers are advanced loans against their crops so that they can hold the crop off the market during the period of heavy harvest when prices are normally depressed. However, most other programs, such as control of imports in raw cotton and manufactured cotton products, are still being used, and the supply is controlled in such a way as to maintain fairly stable domestic cotton prices.

Research personnel are carrying out numerous projects and, considering the few well-trained technicians working on cotton, are accomplishing a great deal. Projects on varieties, cultivating practices, insect and disease controls, and fertilizer application have demonstrated that yield can be increased sharply, although few farmers take advantage of these technical advances.

Research and extension work in Argentina are co-ordinated under the Instituto Nacional de Tecnologia Agropecuaria (INTA). INTA officials, who are responsible for seed multiplication, have encouraged formation of associations of farmers producing genetically pure seed, and have further encouraged farmers to form one-variety communities. In 1960-61 there were 31 Associations of Producers of Selected Seed with 885 members in Chaco-Formosa. These farmers, with more than 75,000 acres of cotton, provide exceptionally good contacts for extension workers.

The Cotton Board approved a cotton classing school in late 1959, and the first course began in March 1960 with 32 students. The school has an elementary course and a secondary course, both designed, in addition to instructions in cotton classing, to present the various phases of cotton marketing and production. The elementary course, lasting 6 months, includes classification, botany, extension work, disease and insect control, and morphology. The secondary course includes economics of cotton, marketing, warehousing, financing, standardization, and ginning. If proper job opportunities are provided for graduating students, this school could have a significant influence on cotton production and marketing in Argentina, especially through more adequate extension work by trained personnel.

Other potential programs that could cause a vastly expanded cotton acreage are such high-cost projects as land drainage and the construction of an extensive network of all-weather roads. The large expenditures necessary for projects of this type, and the apparent lack of desire on the part of the government to develop cotton as an export crop, probably will forestall efforts to initiate such programs. Most of the official effort to expand exports has been and is expected to continue to be aimed at traditionally large export items such as beef, wheat, vegetable oils, and corn.

The Argentine Government, since the early days of the 20th century, has evidenced interest in industrialization, but the big push got underway in the mid-1940's. World prices for agricultural commodities were high during and immediately following the war, and, apparently, officials intended to capitalize on Argentina's expertable supply of many of these commodities to finance a rapid transition to an industrialized nation. This plan was successful for a time immediately following the war, but, as world agricultural production recovered, commodity prices declined, and restrictive measures were needed to protect Argentina's fledgling industries. Heavy import duties and surcharges and, in some cases, complete prohibition of imports of items produced domestically were enacted to protect even extremely inefficient industries. Consequently, although industrialization continued, it was at the expense of some segments of the economy, especially agriculture.

In the case of cotton, industrial job opportunities caused a continuing decline in migrating labor in the Chaco for harvest and other seasonal jobs. Limitations on imports of farm machinery through heavy surcharges designed to encourage domestic production created a severe shortage. Since supply is not equal to demand, even at high prices, machinery dealers enjoy a seller's market, in which profit margins are normally wide. When wide margins are added to high production costs, domestically produced machinery is priced to farmers at extremely high levels. Thus, mechanization has not progressed as rapidly as could have been expected with more realistic prices for imported machinery.

A beneficial effect of the industrialization program on cotton production has been the expansion of the domestic textile industry. By creating artificially high prices for cotton and cotton products, the government enabled farmers to sell their cotton for higher-than-world prices in years when the world price was low. This umbrella over sharp price fluctuations has been one of the most important factors in encouraging a continued expansion of acreage.

Marketing

Argentine cotton farmers use several methods for marketing their crop. The practice of selling lint cotton through a cooperative sales organization is the most widely used, followed by direct sales of seed cotton to independent and large-company gins. Less commonly used marketing methods include sales of seed cotton to transient truckers, custom ginning for large-scale farmers who then market the lint and seed themselves, and marketing through official government gins.

Usually around 30 to 40 percent of the crop moves through the various cooperatives, but in the Province of Chaco, where co-ops are exceptionally strong, at least 45 percent of the crop, and at times, up to 60 percent, moves through co-op marketing channels. Most of the cooperative marketing organizations have their own ginning facilities, and a few have built cottonseed processing facilities.

In only a few instances do farmers actually handle the physical selling of the lint and seed. The practice of hiring custom ginning by some of the larger farmers enables them to sell cotton directly to the textile mills, but most such farmers sell to the larger cotton merchants, who in turn sell to the textile mills.

The practice of selling seed cotton to transient buyers who then deliver to the gins is practically nonexistent today, but in early years this was a common method of selling cotton. A large share of the cotton not moving through cooperatives is sold as seed cotton directly to the ginner who, after ginning, sells the cotton to cotton merchants or textile mills.

In some of the outlying areas where the government has established official gins, farmers are assisted in selling their cotton by officials at the gins.

Ginning

Ginning capacity in Argentina is adequate for handling a 500,000-bale crop with ease. The number of ginning establishments has fluctuated at around 150 plants in recent years, but some of the smaller one-stand and two-stand gins have been replaced by larger gins. All of the gins are saw-type and most are originally of U. S. manufacture; some gins and replacement parts are made in Argentina.

The gins are fairly well distributed throughout the cotton belt, and in outlying areas where ginning facilities were nonexistent, the government established several official government gins. Currently, there are 11 official gins operated by the Cotton Board, of which 4 are located in Formosa, 2 each in Corrientes and Santiago del Estero, and one each in Cordoba, Salta, and Catamarca. Also, the government, through the Extension Service (INTA) operates a saw gin at the experiment station near the city of Las Breñas in western Chaco for shorter staple cotton, and a small roller-gin at the experiment station in Catamarca for long-staple cotton, both for experimental purposes only. Of the remaining gins, about one-third are cooperatives and the remainder are privately owned by both large concerns and small independent operators.

Considering the relatively low quality of the cotton delivered to the gins, a fairly good job of ginning usually is done. An estimated 10 to 15 percent of the gins have no special drying equipment and less than 2 percent have lint cleaning equipment. In recent years, because of a 100-percent surcharge on imported ginning machinery, little new equipment has been installed.

Marketing operations following ginning are normally handled by the gin companies or by representatives of the co-op gins. Cotton is sold directly to the textile mills or to cotton merchants or brokers. Many of the small independent ginners sell cotton to larger concerns which then group the cotton into larger lots of similar quality and sell it either directly to textile manufacturers or to intermediates.

After cotton is sold it is shipped south to the textile plants located primarily in the Province of Buenos Aires and the Federal District or to the Port of Buenos Aires for export. Cotton moving out of the producing region can be shipped by rail, by truck, or by boat down the Parana River. Because river transportation is more rapid, a large share of the cotton is shipped by boat.

Textile Industry

The cotton textile industry was one of the first industries established in Argentina. Starting in the mid-1550's in the northwestern section of the country, the industry continued as an important segment of the economy for more than 200 years. With the development of large-scale textile industries in Europe and the United States, this cottage-type industry faded from the economic scene around the middle of the 19th century. When the textile industry was revived, in the early years of the 20th century, it grew slowly from one spinning mill with 7,040 spindles in 1917 (a mill apparently established around the turn of the century) to 10 mills with 140,000 spindles in 1934. However, since 1934 there has been a fairly sharp uptrend in spindle numbers and, since 1952, about 98 percent of the annual sales of cotton textiles have been made from domestically produced yarn. In 1960, there were 66 spinning mills with 1,038,378 spindles (1,027,713 active spindles). Since 1928, there has been an increase in spindle numbers each year, with the greatest gain occurring in 1950 (Appendix, table 3).

In 1960 there were about 22,600 cotton weaving looms in place but only 21,600 were active. About two-thirds of the inactive looms were nonautomatic and hand looms, which comprise around 35 percent of the total number of looms. Automatic looms account for 55 percent and semiautomatic looms account for 10 percent of the total. In addition to the looms, the industry had 9,240 knitting machines--4,865 for hosiery and 4,375 for other cotton textiles.

The Argentine spinning industry makes a wide variety of yarns, and in recent years the average yarn count has been slowly rising. In 1958, the average count for carded yarns was 14.7; for combed yarns, 32.6. For the total of carded and combed, the weighted average was 16.8. Ten years earlier, in 1948, the average for carded yarns was 13.0 and for combed was 27.5 and the weighted average for the total output 13.6. The high percentage of coarser yarns is attributed to the low quality of Argentine cotton and the relatively low standards of living for much of the population, which permitted coarser textiles to be consumed. Practically all yarns with a higher-than-70 count are produced from imported cotton.

The rapid growth of the textile industry after 1934 resulted mainly from government policies designed to encourage self-sufficiency in textiles. Supplies of textiles were kept at artificially low levels by restricting or prohibiting imports. Consequently, Argentine textiles have been priced above world price levels. These high prices encouraged production by, and even expansion of, inefficient as well as efficient plants. Protectionism also was extended to the domestic textile machinery manufacturers and this, combined with a tight foreign exchange situation, has prevented the rapid modernization of the industry. Prior to May 1961, a surcharge of 150 percent established several years earlier, was imposed on almost all imported textile industry machinery--excluding some repair parts and highly automatic looms which were exempt from surcharges. Possibly with a view toward an expanded market in the developing Latin American Free Trade Area, the government, in May 1961, reduced this surcharge to 40 percent with previously exempted items still excluded. As compensation to the domestic machine industry, the government waived surcharges on parts imported by the industry and exempted domestically produced machinery from all internal sales taxes. This action could allow a fairly rapid modernization of the industry, but the low-quality problem will not improve to any extent until Argentina either produces or imports a large volume of higher quality cotton.

Consumption

During the first half of this century, consumption of cotton by the Argentine textile industry rose steadily, moving from virtually nil in the early years to over 400,000 bales annually by 1950. This upward trend reflected the growing textile industry and rapidly increasing population of the country. Since 1950, mill consumption has moved erratically. An unusually sharp increase in 1951, occasioned by the Korean conflict, caused a heavy textile stock accumulation. Consequently, mill consumption dipped sharply while these stocks were used. Despite these abnormalities, the general trend in consumption was maintained until the beginning of the strict austerity program in 1959. (Cotton consumption, other than that at the spinning mills, is relatively small).

Coinciding with the reduction in consumer purchasing power brought about by the austerity program were short crops in the spring of 1959 and 1960, which sharply increased prices. In addition the austerity program kept imports of raw cotton and cotton textiles at low levels, and, in 1959, textile workers went on a long strike.

The following data show the rapid growth in cotton consumption since 1920 and the drop in 1959:

Year	Consumption	Year	Consumption
Average:	1,000 bales	Annual:	1,000 bales
1920-24	8.8	1955	499.0
1925-29	20.2	1956	543.8
1930-34	40.2	1957	529.1
1935-39	129.8	1958	538.0
1940-44	257.6	1959	476.4
1945-49	356.7	1960	520.8
1950-54	437.9	1961 (estimate)	525.0

Mill consumption of cotton since 1952 should reflect, primarily, demand for textiles since textile imports have been negligible. From 1953 through 1958, mill consumption increased at a rate of almost 4 percent, but because of the heavy textile stocks on hand at the beginning of this period, the true rate of growth is distorted. Had stocks been at nominal levels at the beginning of 1953, consumption in both 1953 and 1954 would have been greater, and consumption would reflect more accurately the true growth rate.

The growth rate in mill consumption appears to have been around 2 percent, or about equal to the growth in population. Also, sales of finished cotton products on a per capita basis have increased but little in the last 30 years, lending further credence to an estimated growth in cotton consumption approximating the growth rate of the population. Total cotton textile consumption, however, has almost doubled since 1930 because of the rapid growth in population (Appendix, table 4).

Argentina ranks high in the world as a consumer of cotton on a per capita basis, averaging around 13 pounds per year. Argentina consumers use more than twice as much cotton as most of their South American neighbors, the exceptions being Brazilians and Uruguayans, who, nevertheless, consume around 40 percent less than the Argentinans. Chile, the only other South American country with a climate approximating Argentina's, uses only half as much cotton per capita, and total fiber consumption per person in Chile is only 60 percent as large as in Argentina, reflecting a smaller volume not only of cotton but also of wool and man-made fibers. Total fiber consumption in Argentina is around 18 pounds per person and, relative to other South American countries, is exceptionally high. In Uruguay, the nearest to Argentina in per capita consumption, the total is around 12 pounds, and in Brazil, the next nearest, around 10 pounds. Per capita consumption of cotton in Argentina, ranking fifth highest of any country in the world, is 25 percent above that of the "average" West European.

The relatively high level of cotton consumption in Argentina reflects not only the temperate climate of the country, but also the limited volume of man-made fibers available. While cotton consumption in Argentina is high relative to Western Europe, total fiber consumption is approximately the same. Wool consumption is at the same level, but in Western Europe man-made fiber use is 2.5 times greater.

The most significant development in the textile consuming pattern is the steady drop in the percentage of imported textiles relative to domestically produced goods. In the early 1930's, more than 80 percent of the textiles entering the Argentine market were imported. By 1952 this percentage had fallen to only 2 percent of the total and has been near this level every since. Despite the sharp drop in imports, consumption per capita was maintained and total consumption increased until the austerity program was introduced, reflecting not only the continued growth of the textile industry, but also the ability of this industry to make a wide variety of products demanded by the consumer.

Other Fibers

Wool

Argentina is a leading world producer and exporter of wool, and domestic consumption is relatively high--averaging about one-fourth that of cotton. Consumption in 1959 totaled 62 million pounds compared with 77 million pounds in 1958 and a 1955-59 average of 68 million pounds. Wool consumption in 1959 dropped for the same reason as cotton, i.e., the austerity program and long strikes by the textile industry.

Wool consumption on a per capita basis, averaging slightly over 3 pounds per year, is roughly 3 times larger than the average for South America. Chile, the only other country with a similar climate, consumes about 2 pounds of wool per year per person and ranks second on a per capita basis in South America. In the last 20 years, there has been little change in wool consumption, and little change is expected in the near future.

Rayon

Rayon production began in Argentina in 1936 and, with only minor setbacks, has grown steadily. Production, which in 1936 totaled only one-half million pounds, reached a peak of 36.9 million pounds in 1958. Production in 1960, at only 30.7 million pounds (23.7 million filament yarn and 7.0 million staple and tow), was 17 percent below the record of 1958 and 0.8 million pounds below the reduced output of 1959. The drop in rayon production is attributed to the same factors which cut cotton use.

The 1960 output was only 57 percent of the estimated annual capacity of 53.2 million pounds. In 1961, capacity expanded to 56.6 million pounds, but production probably will continue below the record level of 1958, mainly because the expanding supply of synthetic fibers is creating stiff competition for some of the markets enjoyed by rayon.

Rayon textiles compete with cotton textiles in the Argentine market. In addition, rayon is used in a wide variety of blends with the natural fibers, but data are not available to indicate the volume of rayon so used. The growing use of rayon has largely resulted in an increase in total fiber consumption. According to data compiled by the Food and Agriculture Organization, Rome, Italy, fiber consumption in 1938 totaled 14.5 pounds per person but grew to an average of 18.0 pounds in 1955-58. During the 20 years between 1938 and 1958, use of all fibers except wool expanded. Cotton use was up about 2 pounds[1] per person and rayon use increased from only 0.6 pound in 1938 to 2.0 pounds in 1958. The 1955-58 average was 1.8 pounds (Appendix, table 7).

In 1959 and 1960 rayon use followed the same downward pattern as cotton. In addition, rayon had the added problem of a rapidly expanding nylon industry reaching into some of its traditional markets. As the economy regains its vitality, rayon should regain some of the ground lost in 1959 and 1960, but synthetic fibers will continue to offer increasing competition.

Nylon and Saran

Only two synthetic fibers are currently being produced in Argentina--nylon and saran. Four plants are producing nylon, and saran is made in one small plant. In various stages of development or planning are three plants for producing polyester fiber, but the earliest production is not expected until late 1962.

Nylon is by far the leading synthetic fiber produced in Argentina today. Production in 1960 reached almost 3.0 million pounds, almost double the 1.7 million pounds produced in 1959 and five times larger than the output just 5 years earlier. The first nylon plant began production in 1949 and was without competition until 1959 when two additional plants began production. A fourth plant recently began production, thus, total nylon capacity is now around 7 million to 8 million pounds annually. The rapid growth of the domestic nylon industry is attributed to the growth of the petroleum industry, which supplied raw materials for the industry and to the latent demand for nylon, which because of trade restrictions, had never been met. Prior to the development of the domestic petroleum industry, all polymer used in nylon production was imported, and imports were subjected to a surcharge of 100 percent of the c.i.f. value of the polymer and, in addition, were controlled by import licenses.

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[1] Argentine statistics indicate a per capita cotton consumption increase of less than 1 pound between 1938 and 1958, and the Argentine data are believed to be more nearly representative of the actual trend. The discrepancy results from different methodology whereby FAO does not account for manufacturing losses in domestic textile production. Thus, where a country such as Argentina shifts from a textile importer to reliance on domestic production, consumption trends tend to be inflated.

Nylon was the only fiber industry to miss the effects of the austerity program. While use of cotton, wool, and rayon was cut back, nylon enjoyed an expanding market, not only domestically produced yarn, but also imported yarn. In an effort to encourage industrial development in the sparsely populated section of the country south of the 42nd parallel, the government exempted imports of machinery and raw material into this area from import surcharges. Nylon textiles presented an excellent opportunity for expansion since supply had never been large enough to meet demand. Consequently, 27 nylon weaving mills, to use imported duty-free yarn, and 8 nylon garment factories were built between 1957 and 1959. Instead of causing curtailed sales of domestic nylon yarn because of competition from imported yarn, the mills in the south had a promotional effect, and local nylon yarn producers increased production in a period when the use of other fibers was dropping sharply. The duty-free decree was later modified, and as of June 1, 1961, suspended, but imports of nylon yarn were allowed to continue south of the 42nd parallel at rates substantially below established rates for the rest of the country. The more efficient plants in the south should continue operations, at least for some time, because of the exceptionally good demand for nylon textiles.

Foreign Trade in Raw Cotton

Argentina is both an importer and exporter of cotton lint but exports normally far exceed imports. In only 4 of the last 40 years has there been a net import balance, each time following, by 1 or 2 years, a sharp drop in production.

Exports

Prior to the beginning of the rapid growth of the cotton textile industry in the mid-1930's, exports closely followed the uptrend in production. However, since the advent of a sizable textile industry, they have been sporadic--ranging from none in 1949 to a peak of 282,000 bales in 1953 (Appendix, table 5).

Exports of cotton were freed from governmental control in 1959, after several years of strict regimentation through a system of quotas and licensing. However, they are still of the lower grades of cotton, Grade E or F (the only cotton shipped for several years), because mills purchase the higher qualities for domestic use. Mill purchase of the higher grades is assured through official control of imports. The export surplus each year depends on the ability of the mills to absorb the lower grades of cotton produced. In some years, when the crop is hindered by excessive rainfall, the volume in these lower grades is exceptionally large.

There is a fairly good balance between production and domestic consumption, except for the surplus of lower grades, so that exports of the better grades would necessitate imports of a like quality of cotton. A rapid expansion in cotton production would, of course, change the export picture considerably but, as pointed out earlier, present conditions indicate a continued gradual increase in production and a rising domestic consumption roughly offsetting the expanding output.

Argentina does not directly subsidize exports of cotton. Recently there has been some pressure exerted, mostly by farm groups and traders, to have the government subsidize exports but this move has been resisted.

Through the years, the United Kingdom has been the most important customer for Argentine cotton. Other important European markets are the Netherlands, Belgium, and Italy. Prior to World War II, shipments to Spain and Germany were consistently large but, since the war, sizable shipments to these two countries have been infrequent.

Japan in some years is an important destination for cotton shipped from Argentina. In 1953, the year of record exports Japan was the largest single market--taking 104,374 bales, 37 percent of a total of 282,212 bales exported. This quantity is the second largest annual export to any one country and was exceeded only by the 115,000 bales sold to Spain in 1941.

Historically there is little established seasonal pattern for Argentine cotton exports. This reflects the control exercised by the government for many years. Export quotas were released at any time during the year that the government, on advice from the Cotton Board, decided that an exportable surplus existed.

The export outlook for Argentine cotton depends largely on the production outlook. Repeatedly the stated objective of government policy related to cotton is self-sufficiency, and current policy is aimed in this direction.

Thus, cotton exports from Argentina are likely to continue in the present sporadic manner, with sizable quantities in years when surpluses of low-quality cotton accumulate and negligible exports in other years. And, as Argentina expands industrially, more of the low-quality cotton now exported could be used at home to meet increasing domestic needs for industrial purposes.

Imports

Argentina imports varying--but relatively small--volumes of cotton annually, and in recent years almost all imports have been Peruvian cotton. Imports are all long-staple or extra-long-staple cotton not produced locally in sufficient volume to meet domestic needs. Imports in the last 40 years have ranged from a low of 110 bales in 1933 to a high of 31,507 bales in 1959. They have been consistently larger since the textile industry expanded sharply and, since 1940, the smallest import volume has been 2,393 bales imported in 1958.

Prior to 1940, Brazil and Paraguay were the principal suppliers of cotton to Argentina, but since imports from Peru began--also in 1940--Peru has supplied over 50 percent of the cotton imported in every year except 1942 and 1955 when shipments from Brazil and Egypt, respectively, exceeded those from Peru. Imports from Peru are accorded special import tax treatment which accounts for its dominance of the Argentine market (Appendix, table 6).

Peruvian long-staple cotton has been accorded concessions granted in Argentina's "neighboring countries" trade agreements for several years as far as the 40-percent surcharge is concerned, thereby giving Peru, in effect, a 40-percent price advantage in the Argentine market. This concession is made as a means of maintaining a balance of payments between the two countries. The imbalance in favor of Argentina can be seen from the following data:

Year	Exports to Peru	Imports from Peru	Balance
	Million m$n	Million m$n	Million m$n
Average:			
1946-50	57.2	26.5	31.6
1951-55	104.7	127.2	-22.5
Annual:			
1956	274.0	135.7	138.3
1957	356.9	233.2	123.7
1958	352.1	90.4	261.7
1959	612.4	786.8	-174.4
1960	1,278.6	983.5	295.1

Argentina exports a variety of commodities to Peru, but Peru has little that Argentines are willing to purchase except some metals and long-staple and extra-long-staple cotton, especially since Argentina has developed a domestic petroleum industry. Formerly, Peru sent sizable quantities of petroleum products to Argentina. This concession assuring Peru of the Argentine market for long-staple and extra-long-staple cotton is expected to continue at least for some time, unless the development of the Latin American Free Trade Area extends benefits of these concessions on raw cotton to other producers. Most of the cotton that Argentina now imports is Tanguis, except for around 2,000 to 3,000 bales of extra-long-staple cotton annually. Practically any other good-quality upland cotton with a long staple would serve as well as, or even better, the purposes for which the imported Tanguis is used. However, there appears to be no inclination on the part of the Argentines to import other growths, and little demand from mill owners to be accorded the privilege of importing other growths.

The present import duty on cotton is 18 percent of the c.i.f. custom valuation. In addition, there is a surcharge of 150 percent of the c. and f. valuation on all cotton except long-staple cotton, on which there is a 40-percent surcharge. Long-staple cotton from neighboring countries is permanently exempted from the 40-percent surcharge and cotton from Peru is accorded like treatment. The import duty and surcharge on shorter staple cotton, which totals over 50 cents per pound on 30-cent cotton, effectively prohibits competition with local growths. And the 18-percent import duty on longer staple varieties encourages mills to use all the longer staple domestic cotton and to purchase imported cotton only when local supplies are not available.

Government authorities have expressed a desire to increase production of long-staple cotton and thereby eliminate the need for imports, but, thus far, little has been done in this direction. Private companies have initiated projects in the irrigated regions of the northwest, but production of cotton there remains small. Mostly because of high development costs for the land and strong competition for land use by more profitable crops, little progress has been made in overcoming the need to import cotton. Furthermore, unless the government or private industry decides to finance a large-scale project for raising irrigated cotton in the northwest, there appears to be little chance of cutting import needs in this manner. New, high-yielding varieties may be developed especially for western Argentina that will encourage some expansion of irrigated acreage.

In any event, it will be several years before much progress will be made in eliminating the need for imports. Thus far, the government has recognized that imports are needed and, even during the severe austerity program, allowed them to be made. Should the government decide that they are no longer needed, it could easily change the picture of continued imports, but not the need for imports, for several years.

Appendix

TABLE 1.--Cotton: Acreage, yield, and production, averages 1910-14 through 1930-34, crop years, 1935-60

Year[1]	Acreage[2]		Yield[3]	Production[4]
	Planted	Harvested		
	1,000 acres	1,000 acres	Pounds per acre	1,000 bales
Average:				
1910-14	7	--	214	2
1915-19	22	--	207	9
1920-24	116	--	186	39
1925-29	241	--	225	115
1930-34	436	--	212	191
Crop year:				
1935	909	763	234	373
1936	1,015	713	97	144
1937	1,048	803	141	237
1938	1,005	841	186	327
1939	903	728	238	362
1940	832	738	150	232
1941	815	760	235	373
1942	900	831	286	498
1943	995	913	290	553
1944	944	887	179	332
1945	926	813	168	285
1946	980	892	179	334
1947	1,040	978	203	413
1948	1,277	1,169	186	453
1949	1,206	1,131	277	652
1950	1,236	1,140	198	471
1951	1,459	1,385	199	575
1952	1,397	1,317	207	567
1953	1,444	1,362	224	635
1954	1,437	1,333	189	524
1955	1,465	1,318	205	563
1956	1,547	1,346	172	481
1957	1,809	1,585	237	783
1958	1,717	1,225	180	460
1959	1,494	1,139	172	409
1960	1,622	1,243	216	560

[1] Crop planted in October-November of the year given and harvested in February-May of the following year.

[2] Acreage data prior to 1935 were compiled by various methods and are not consistent with later data. Since 1935, planted acreage has been the estimated area under cultivation Jan. 1, and separate estimates have been made for harvested acreage.

[3] Yields for years prior to 1935 are not comparable to later data because of inconsistencies in acreage data.

[4] Bales of 478 pounds net prior to 1947; 480 pounds thereafter.

Argentine National Cotton Board records.

TABLE 2.--Cotton: Production by Province, crop years 1938-39 through 1960-61[1]

Crop	Chaco	Formosa	Corrientes	Santa Fe	Santiago del Estero	Missiones	Salta	Cordoba	Catamarca	Jujuy	Other[2]	Total
	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales
1938-39.....	283.4	12.4	17.7	3.8	6.5	1.4	1.2	0.1	0.3	0.1	0.1	327.0
1939-40.....	316.7	6.8	8.6	4.3	23.7	.2	1.1	.3	.2	.2	.4	362.5
1940-41.....	196.9	7.0	12.2	4.7	9.2	.2	1.2	.5	(3)	--	.3	232.2
1941-42.....	303.4	19.5	27.0	10.6	9.5	.5	1.6	.8	.1	--	.1	373.1
1942-43.....	384.0	39.0	40.8	20.4	8.0	1.9	2.2	.8	.3	.1	.1	497.6
1943-44.....	439.4	42.2	36.4	15.0	14.6	2.9	1.2	.6	.3	.4	.1	553.1
1944-45.....	268.8	13.9	19.4	13.5	12.7	1.9	.9	.5	.1	.5	(3)	332.2
1945-46.....	229.0	17.5	18.3	14.9	3.6	.7	.2	.2	(3)	.1	(3)	284.5
1946-47.....	269.6	28.6	15.2	13.0	6.4	.9	.2	.1	.1	.2	(3)	334.3
1947-48.....	314.5	35.6	29.6	24.8	7.3	.4	.2	.2	.2	.2	(3)	413.0
1948-49.....	347.8	32.3	29.9	36.0	5.5	.8	.1	.4	.2	.2	(3)	453.2
1949-50.....	490.0	54.6	36.2	48.8	19.4	1.5	.7	.7	.3	.1	--	652.3
1950-51.....	339.0	44.6	37.0	34.0	13.1	.7	.5	1.0	.1	.5	--	470.5
1951-52.....	421.2	56.3	45.3	40.6	9.2	.7	.6	.3	.2	.2	(3)	574.6
1952-53.....	421.0	49.3	36.5	46.7	10.3	.9	.7	.7	.2	.4	(3)	566.7
1953-54.....	470.5	60.7	34.8	53.0	12.5	.9	.7	1.1	.1	.4	(3)	634.7
1954-55.....	368.0	57.9	34.0	50.9	10.8	.6	.7	1.0	.2	.6	.1	524.8
1955-56.....	424.7	61.3	34.9	27.5	11.0	.5	.5	1.7	.1	.1	.1	562.4
1956-57.....	324.2	42.0	33.4	56.6	19.4	.6	.9	2.9	.3	.6	.2	481.1
1957-58.....	545.1	88.6	48.0	57.5	35.2	2.2	2.2	2.8	.6	.9	.2	783.3
1958-59.....	330.9	48.2	14.4	30.9	29.6	1.4	1.5	1.8	.3	1.1	.2	460.3
1959-60.....	298.5	39.5	14.2	26.2	(4)	(4)	(4)	(4)	(4)	(4)	30.8	409.2
1960-61.....	380.8	66.1	15.2	51.4	(4)	(4)	(4)	(4)	(4)	(4)	46.8	560.3

[1] Bales of 478 pounds net prior to 1946-47; 480 pounds thereafter. [2] Includes Tucuman, La Rioja, Entre Rios, and San Luis. [3] Less than 50 bales. [4] Included in other.

Compiled from Official Argentine records.

TABLE 3.--Cotton: Spinning industry, consumption and yarn production, averages 1905-09 through 1930-34, annual 1935-60

Year	Cotton spinning industry			Cotton consumption				Yarn	
	Spinning mills	Spindles		Mill	Other	Total	Per capita	Production	Average count
		Total[1]	Active[2]						
	Number	1,000	1,000	1,000 bales	1,000 bales	1,000 bales	Pounds	Million pounds	Number
Average:									
1905-09.......	1	7.0	--	2.2	0.2	2.4	0.2	0.7	11.0
1910-14.......	1	7.0	--	[3] .7	.9	1.6	.1	[3] .2	11.0
1915-19.......	1	8.3	--	2.3	1.2	3.5	.2	.9	10.9
1920-24.......	4	21.5	--	7.5	1.3	8.8	.5	2.8	10.3
1925-29.......	5	35.3	--	18.8	1.3	20.1	.9	7.7	11.0
1930-34.......	7	86.4	--	38.7	1.4	40.1	1.6	15.8	12.8
Annual:									
1935..........	18	215.1	--	87.3	2.6	89.9	3.3	35.0	14.4
1936..........	19	262.5	--	112.6	3.0	115.6	4.1	45.8	15.0
1937..........	22	309.0	--	141.1	3.5	144.6	5.1	56.7	15.0
1938..........	23	328.9	323.9	133.0	3.4	136.4	4.7	53.7	14.8
1939..........	22	332.0	326.9	159.4	3.2	162.6	5.5	64.0	14.8
1940..........	22	347.3	346.8	177.3	4.9	182.2	6.1	72.6	15.1
1941..........	23	368.5	366.8	202.6	6.1	208.7	6.7	83.5	14.9
1942..........	26	387.7	381.6	263.1	4.5	267.6	8.7	109.6	14.5
1943..........	26	395.6	393.4	288.8	6.0	294.8	9.4	122.1	14.4
1944..........	31	419.7	416.5	327.9	6.6	334.5	10.5	139.0	13.3
1945..........	32	430.3	426.2	331.4	4.6	336.0	10.3	140.3	13.2
1946..........	34	463.7	452.2	337.2	6.8	344.0	10.5	142.2	13.2
1947..........	35	480.0	470.7	349.4	3.6	353.0	10.5	145.2	13.4
1948..........	41	551.3	527.3	371.4	3.1	374.5	10.9	154.2	13.6
1949..........	46	561.6	572.0	373.3	2.5	375.8	10.6	154.2	13.7
1950..........	54	708.5	641.2	409.1	4.8	413.9	11.4	169.0	14.0
1951..........	61	789.4	747.9	491.9	5.3	497.2	13.4	201.6	14.5
1952..........	63	837.0	788.9	430.3	1.9	432.2	11.4	181.0	15.1
1953..........	61	853.2	814.8	399.0	1.0	400.0	10.3	168.0	15.7
1954..........	65	885.9	860.8	445.8	.2	446.0	10.3	186.6	16.2
1955..........	70	930.5	906.9	499.0	(4)	499.0	12.4	208.5	16.4
1956..........	69	948.0	937.1	543.6	.2	543.8	13.3	222.7	16.4
1957..........	70	974.0	960.8	529.1	(4)	529.1	12.7	217.1	16.7
1958..........	71	1,004.4	990.8	535.5	2.5	538.0	12.6	218.8	16.8
1959..........	67	1,027.7	1,022.4	474.4	2.0	476.4	11.0	189.7	16.8
1960..........	66	1,038.4	1,027.7	519.9	.9	520.8	11.9	210.3	16.7

[1] Mid-year in place.
[2] Active at anytime during the year.
[3] Five-year average based on two years.
[4] Less than 50 bales.

Argentine National Cotton Board records.

TABLE 4.--Cotton textiles: Annual availabilities, imported and domestically produced, and per capita equivalent, 1930-60

Year	Imports[1]		Production[2]		Total	Per capita
	Quantity	Percent of total[3]	Quantity	Percent of total[3]		
	Mil. lbs.	Percent	Mil. lbs.	Percent	Mil. lbs.	Pounds
1930.............	101.0	91.2	9.7	8.8	110.7	9.7
1931.............	77.4	86.9	11.7	13.1	89.1	7.8
1932.............	77.8	83.0	15.9	17.0	93.7	7.9
1933.............	93.7	83.3	18.7	16.7	112.4	9.3
1934.............	91.3	78.0	25.8	22.0	117.1	9.6
1935.............	100.1	73.8	35.5	26.2	135.6	10.3
1936.............	76.5	62.6	45.6	37.4	122.1	9.1
1937.............	88.0	60.5	57.3	39.5	145.3	10.7
1938.............	84.7	61.0	54.0	39.0	138.7	10.0
1939.............	54.9	45.9	64.8	54.1	119.7	8.5
1940.............	55.6	43.5	72.1	56.5	127.7	8.9
1941.............	42.0	33.3	84.0	66.7	126.0	8.7
1942.............	49.8	31.7	106.9	68.3	156.7	10.6
1943.............	26.6	18.2	119.8	81.8	146.4	9.7
1944.............	29.6	17.9	135.9	82.1	165.5	10.8
1945.............	21.6	13.6	137.4	86.4	159.0	10.3
1946.............	14.4	9.3	141.0	90.7	155.4	9.8
1947.............	60.8	29.5	145.4	70.5	206.2	12.8
1948.............	40.3	20.8	153.6	79.2	193.6	11.7
1949.............	41.9	21.4	153.5	78.6	195.4	11.5
1950.............	23.5	12.3	168.2	87.7	191.7	11.0
1951.............	21.5	9.6	202.6	90.4	224.1	12.5
1952.............	25.0	12.4	176.4	87.6	201.4	11.0
1953.............	3.4	2.0	163.2	98.0	166.6	9.0
1954.............	1.0	.6	182.0	99.4	183.0	9.7
1955.............	4.3	2.1	203.6	97.9	207.9	10.8
1956.............	1.2	.5	221.9	99.5	223.1	11.3
1957.............	1.9	.9	215.9	99.1	217.8	10.8
1958.............	4.1	1.8	219.5	98.2	223.6	10.9
1959.............	1.4	.7	194.4	99.3	195.8	9.4
1960.............	1.5	.7	212.5	99.3	214.0	10.2

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[1] Includes annual imports of yarns, cloth and other articles made from cotton, but excludes some articles of mixed cotton and other fibers, which account for minor portion of the total textile imports.

[2] Includes the total quantity of domestic and imported cotton used less 15 percent as an estimated loss in manufacturing.

[3] Percentages in original statistics which may not agree exactly with quantities given because of rounding.

Argentine National Cotton Board records.

TABLE 5.--Cotton: Exports by country of destination, averages 1920-24 to 1935-39, annual 1940-1960

Year	Belgium	Germany West[1]	Italy	Netherlands	Spain	United Kingdom	Other Europe	South America	Japan	Other	Total
	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales	1,000 bales
Average:											
1920-24...........	1.6	5.1	0.5	0.3	1.5	4.7	2.3	0.1	--	0.3	16.4
1925-29...........	6.3	11.9	5.4	.7	8.6	36.9	7.5	.1	--	.5	77.9
1930-34...........	6.6	18.9	3.2	1.3	6.5	69.3	12.4	.1	--	.3	118.6
1935-39...........	3.1	55.9	4.6	6.0	12.1	36.2	4.7	.1	5.0	1.2	128.9
Annual:											
1940..............	1.0	--	14.5	2.2	45.5	32.0	--	.1	.3	4.2	99.8
1941..............	--	.2	--	--	115.1	--	--	.3	--	1.5	117.1
1942..............	--	--	--	--	(2)	--	--	--	--	--	(2)
1943..............	--	--	--	--	--	--	--	21.9	--	16.0	37.9
1944..............	--	--	--	--	--	--	--	31.5	--	16.2	47.7
1945..............	--	--	--	--	--	3.7	3.1	28.0	--	4.3	39.1
1946..............	.7	--	6.4	2.6	--	68.4	10.5	17.7	--	3.7	109.9
1947..............	3.7	--	--	8.9	--	12.0	.7	4.6	--	--	29.9
1948..............	--	--	--	--	22.6	--	--	--	--	--	22.6
1949..............	--	--	--	--	--	--	--	--	--	--	--
1950..............	8.2	1.2	15.6	5.0	17.6	61.6	5.2	.2	35.2	8.9	158.7
1951..............	2.2	1.5	35.2	14.3	27.1	27.9	4.1	25.0	22.2	6.8	166.3
1952..............	14.4	1.3	--	3.9	--	74.7	--	--	13.3	--	107.5
1953..............	31.3	15.0	1.0	34.2	1.0	64.1	2.4	2.2	104.4	28.4	282.2
1954..............	25.9	4.3	2.8	32.5	--	27.6	6.9	--	18.3	8.1	126.4
1955..............	3.3	.5	--	--	--	1.1	--	--	1.8	1.6	8.3
1956..............	.7	--	1.0	--	--	.8	--	--	--	--	2.5
1957..............	12.7	.1	13.0	1.1	--	15.4	1.6	--	--	3.8	47.7
1958..............	2.7	1.5	1.9	--	--	1.4	--	--	1.8	2.3	11.6
1959..............	14.8	2.0	1.2	4.8	--	8.0	1.3	--	10.7	1.0	43.8
1960..............	3.4	1.1	1.2	1.2	--	3.3	--	--	14.7	9.9	34.8

[1] Prewar Germany prior to 1945. [2] Less than 50 bales.

Compiled from official records.

TABLE 6.--Cotton: Imports by country of origin, averages 1920-24 through 1935-39, annual 1940-60

Year	Brazil	Egypt	Paraguay	Peru	United States	Other countries	Total
	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Average:							
1920-24	122	--	847	--	104	201	1,274
1925-29	302	--	96	--	246	199	843
1930-34	195	--	15	--	32	61	303
1935-39	462	--	808	--	1	108	1,379
Annual:							
1940	258	--	--	2,016		109	2,385
1941	5,494	--	--	5,350	1	--	10,845
1942	5,801	--	3,125	3,137	1	4	12,068
1943	200	--	13	5,666	--	--	5,879
1944	150	--	1,059	2,453	--	--	2,662
1945	26	--	67	3,327	--	--	3,420
1946	128	--	40	4,979	--	--	5,147
1947	--	--	--	8,042	--	--	8,042
1948	--	--	--	6,026	--	--	6,026
1949	--	--	--	12,543	--	--	12,543
1950	--	--	--	9,673	--	--	9,673
1951	--	--	--	10,403	--	--	10,403
1952	--	--	--	7,284	--	--	7,284
1953	--	--	--	11,528	--	--	11,528
1954	69	331	--	11,468	--	--	11,868
1955	--	5,631	--	2,838	--	--	8,469
1956	--	2,411	--	5,962	--	--	8,373
1957	--	1,217	--	16,907	--	142	18,266
1958	--	455	--	1,938	--	--	2,393
1959	--	--	--	31,507	--	--	31,507
1960	--	--	--	22,951	--	--	22,951

Compiled from official records.

TABLE 7.--Man-made fibers: Plants and production, 1935-1960

Year	Rayon[1]		Nylon	
	Plants	Production	Plants	Production
	Number	Million lbs.	Number	Million lbs.
1935	1	--	--	--
1936	1	0.5	--	--
1937	2	2.0	--	--
1938	2	2.8	--	--
1939	2	5.8	--	--
1940	2	5.6	--	--
1941	2	7.4	--	--
1942	2	8.2	--	--
1943	2	7.8	--	--
1944	2	8.3	--	--
1945	2	9.2	--	--
1946	2	10.1	--	--
1947	3	10.0	--	--
1948	3	10.2	--	--
1949	3	14.8	1	0.6
1950	3	17.5	1	.3
1951	3	18.1	1	.4
1952	4	18.3	1	.4
1953	4	18.8	1	.2
1954	4	24.9	1	.5
1955	4	26.0	1	.6
1956	4	30.9	1	.6
1957	4	34.7	1	1.0
1958	4	36.9	1	1.4
1959	4	31.5	3	1.7
1960	4	30.7	3	3.0

[1] Includes filament, staple and tow.

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TABLE 8.--Cotton: Staple length distribution by millimeters,[1] crop year 1959-60 by province and total crop years, 1955-56 through 1959-60

Year and province	Millimeters						
	22 or less	23	24	25	26	27	28 and above
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1959-60:							
Chaco............	8.2	39.3	45.3	6.8	0.4	--	--
Formosa..........	--	4.2	39.1	31.7	21.8	1.8	1.4
Santa Fe.........	.1	4.2	67.6	28.1	--	--	--
Santiago del Estero.........	--	7.2	59.7	28.7	2.3	--	2.1
Corrientes.......	.1	17.3	47.2	35.2	.4	--	--
Catamarca........	--	--	--	--	--	--	100.0
Cordoba..........	--	--	--	--	--	3.9	96.1
Salta............	--	--	--	--	9.3	16.0	74.7
Total:							
1955-56..........	6.8	15.3	39.6	36.8	.2	.2	1.1
1956-57..........	11.7	25.5	44.5	14.0	1.4	1.0	1.9
1957-58..........	8.8	23.9	34.8	24.6	5.9	.1	1.9
1958-59..........	6.1	16.3	39.9	30.6	5.7	.8	.6
1959-60..........	6.2	32.2	45.4	13.0	2.4	.2	.6

[1] Because methods of measuring staple length vary from country to country, exact conversions to inch equivalents are not feasible. Approximate equivalent are: 23 mm and less equal 7/8" and below; 23-27 mm equal 29/32 - 1 inch; 28 mm and above equal 1 inch and above.

Compiled from Argentine National Cotton Board records.

TABLE 9.--Cotton: Grade distribution by Province for the 1959-60 crop and total crop years 1955-56 through 1959-60

Year and province	A[1]	B[2]	C[3]	D[4]	E[5]	F[6]	Inferior to F[7]
	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1959-60:							
Chaco............	0.1	10.2	44.1	27.6	12.6	4.5	0.8
Formosa..........	--	3.4	44.1	36.4	14.2	1.9	.1
Santa Fe.........	--	16.6	58.6	18.9	4.6	1.2	.2
Santiago del Estero.....	.1	17.6	41.8	21.9	13.8	4.8	--
Corrientes.......	--	7.7	46.5	43.4	2.0	.3	.1
Catamarca........	21.5	29.1	40.5	8.9	--	--	--
Cordoba..........	--	22.2	26.1	32.8	13.9	4.4	.6
Salta............	3.0	11.3	25.2	37.6	19.5	5.4	--
Total:							
1955-56..........	.8	10.6	33.4	35.3	14.7	4.4	.9
1956-57..........	1.7	22.4	36.0	26.4	11.2	2.0	.3
1957-58..........	.2	6.9	17.7	22.9	27.8	17.7	5.2
1958-59..........	.4	6.3	24.5	31.2	23.8	12.0	1.7
1959-60..........	.1	9.7	44.3	29.8	11.6	3.8	.6

[1] Approximately equivalent to the U.S. grade of Strict Middling.
[2] " " " " " " " Middling.
[3] " " " " " " " Strict Low Middling.
[4] " " " " " " " Low Middling.
[5] " " " " " " " Strict Good Ordinary.
[6] " " " " " " " Good Ordinary.
[7] Inferior to the U.S. grade of Good Ordinary.

Compiled from Argentine National Cotton Board records.